NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

SOIL SALINITY MANAGEMENT - NONIRRIGATED

(acre)
CODE 571

DEFINITION

Management of land, water, and plants to control harmful accumulations of salts on the soil surface or in the root zone on non-irrigated areas.

PURPOSES

Treatment of salt and/or sodium affected areas on non-irrigated land to permit desired plant growth

Protect surface and ground water resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all non-irrigated land where (a) human-induced soil salinity e.g. oil field activities, and/or sodicity is at or approaching a level that adversely affects land use, or (b) combinations of factors - topography, soils, geology, precipitation, and land use - indicate the future probability of such adverse effects.

CRITERIA

Compliance with federal, state, and local regulations is the responsibility of the landowner and operator. All required permits shall be obtained prior to reclamation activities.

Grading and shaping operations shall be planned to permit the use of conventional tillage equipment and to provide positive drainage where needed.

Other Field Office Technical Guide practices shall be used where necessary to prevent erosion and prevent off site damage.

Grading and shaping techniques shall leave the soil in suitable enough condition to allow for seedbed preparation operations.

Topsoil treatments will provide a minimum of 6 inches of cover.

Permanent vegetative cover will be used on all sites where at least 75 % of the horizontal electromagnetic induction meter (EM) readings are less than 425 mS/m (millisiemens/meter).

Sites where 50%-75% of the horizontal EM readings are greater than 425 mS/m will likely require a combination of treatments.

Sites with only 50% or less of the horizontal EM readings are less than 425 mS/m are difficult to vegetate and may be treated with either of the following options:

Organic matter will be applied at a 6 inch thickness or,

Permanent water cover by diking around the affected site. See Standards and Specifications for Diking (Practice Code 356). Any discharge will be outletted to a grassed waterway or filter strip.

Where the area is to be grazed with an adjoining pasture, select grasses with approximately the same palatability, maturity, and growth period.

Naturally occurring saline or sodic seeps may not benefit long term from soil remediation practices e.g. gypsum application unless the groundwater charging the seep is intercepted.

NRCS, ILLINOIS
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CONSIDERATIONS

Water Quantity

Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

Water Quality

Potential for transfer of salinity conditions to another location where surface or subsurface drains are used.

Effects of erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances, including salts, that could be carried by runoff.

PLANS AND SPECIFICATIONS

Site specifications for establishing and maintaining the practice will be prepared for each conservation treatment unit. Specifications can be recorded in narrative format, on job sheets, or forms designed to provide specific requirements for the practice. Items to be document include:

- Map or diagram documenting location of site to be treated.
- Required grading and shaping
- Quantities and quality of soil amendments
- Seed mixtures
- Seeding dates
- Operation and maintenance

EM readings will be taken in the horizontal orientation. Maximum distance between EM readings will be based on the size of the area to be remediated. The maximum distances are found in the following table.

<0.1 acre	0.1-0.5 acre	>0.5 acre
5 meters	10 meters	20 meters

Soil Amendments

Prior to seeding apply 4-tons/acre gypsum along with sufficient quantities of organic matter to cover the treated area to a depth of 3 inches. Incorporate to a depth of 3 inches. Apply nitrogen at 120 lbs./acre. Apply phosphorus only if soil tests fall below 15 lbs. P/acre. Potassium fertilizers are not recommended for saline soils. Soil tests and the following formula will be used to determine supplemental gypsum applications:

Tons pure gypsum required = (ESP-5) x CEC x .017 where,

ESP = Percent exchangeable Sodium

CEC = Cation Exchange Capacity

Do not apply more that 5-tons/acre gypsum at one time.

Example: Soil test data for a site requiring additional gypsum. CEC=15, ESP=25

(25-5) x (15) x .017 = 5 tons

Seedbed Preparation and Seeding

Incorporate amendments with a disc or chisel plow. The seedbed shall be firmed by rolling or harrowing prior to seeding. Seed may be applied using drill or broadcast methods. Select species from Table 1. A barley companion crop will be seeded at 20 lbs./acre.

Table 1.

Species	Maximum EM mS/m	Minimum Plant Density (plants/ft^2)	Seed Rate PLS lbs./acre
'Jose'Tall Wheatgrass	425	8	20
Switchgrass	275	3	8-10
Tall Fescue	250	8	15

OPERATION AND MAINTENANCE

Frequent inspections should be made to evaluate stand development during establishment and at least annually thereafter.

Mow only if weeds compete with establishing vegetation. Allow established species to form and mature seeds.

Top dress with appropriate amendments where vigor of established species decline.

REFERENCES

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